

Remarks

Claims 1-31 were pending in the application. Claims 1-13 and 15 were rejected. Claims 16-31 were previously withdrawn. Claim 14 was merely objected to and no claims were allowed. By the foregoing amendment, claims 17-19 are canceled, no claims are amended, and claims 32-34 are added. No new matter is presented.

Withdrawal of Finality

Applicants appreciate the withdrawal of finality as is discussed further in the Interview Summary below.

Allowable Subject Matter

Applicants appreciate the indication of allowable subject matter in claim 14.

Interview Summary/Substance

Applicants appreciate the courtesy of a telephone interview on July 15, 2008 between the undersigned and Examiner David P. Bryant. The undersigned disputed the assertion in the Advisory Action to the effect that Applicants' comments directed to the impropperly of finality of rejections applied to dependent claims were not sufficient.

With reference to claim 13 which was highlighted in Applicants' June 19, 2008 Request for Reconsideration and Withdrawal of Finality, and claim 1, the rejection history and amendment history were discussed. The examiner questioned whether the amendment to claim 1 necessitated the new ground of rejection as to claim 13. The undersigned submitted that the amendment to claim 1 distinguished other art but, because the amendment to claim 1 merely added a feature already in the Office's previously asserted Neal et al./Carl, Jr. et al. rejection of claim 13, the amendment did not, thereby, necessitate the addition of JP '339 to the combination involved in rejecting claim 13. The addition of JP '339 (the new ground of rejection) was, thus, necessitated only by Applicants' arguments regarding the insufficiency of the prior examination and rejection.

The examiner agreed that finality would be withdrawn in an Interview Summary which would maintain the present shortened statutory deadline of July 28, 2008 which the undersigned accepted.

Claim Rejections-35 U.S.C. 103

Claims 1, 2, 6-12, and 15 were rejected under 35 U.S.C 103(a) as being unpatentable over Neal et al. (US2002/0076573) in view of JP08209339. Applicants respectfully traverse the rejection.

Neal et al. was cited for the basics of a vapor deposition process applied to a gas turbine engine component.

JP '339 was asserted as teaching: "applying a first electric potential to the part ; and modulating the first electric potential so as to draw the ionized components to the part (S6) so that buildup of the repair material at least partially replaces the first material (Fig. 6 ; [0033],[0034], Abstract)". Office action, page 2, last three lines. It was further asserted as having been obvious:

to employ the step of modulating the first electric potential so as to draw the ionized components to the part so that buildup of the repair material at least partially replaces the first material, as taught by '339 on the method of Neal et al. so as to improve the quality and adhesiveness of the evaporated particles.

Office action, page 3, lines 2-5.

The Office mischaracterizes JP '339 so as to improperly assert analogy. The Office has provided no reference to any "repair" material or any replacement of lost first material in JP '339. JP '339 appears to involve applying a thin film to a dissimilar substrate. The partial translation provided by the Office identifies DLC and boron nitride films. The substrate is not identified. Clearly, it is incumbent upon the Office to provide a full translation of JP '339 if it intends to rely upon it. JP '339 appears to be in a different field than Neal et al. and to involve a non-analogous situation (e.g., differing materials, repair vs. dissimilar coatings, etc.). The Office has failed to establish that one of ordinary skill in the art would have found Neal et al. deficient, let alone in such a way as one would then have looked for a solution, found that solution in JP '339, and attempted that solution with an expectation of success.

Further differences are noted relative to the specific modulation involved in JP '339. New claims 32-34 are supported by claims 17-19 and further distinguish JP '339. The Office's translation of paragraph 0034 of JP '339 asserts "a high frequency bias with a modulation applied is charged to substrate holder 2..." The non-translated paragraphs contain repeated reference to "13.56MHz" as well as references to "1kHz" and "50%". This appears to correspond to a radio frequency type bias voltage of 13.56MHz modulated at a frequency of

1kHz and duty cycle of 50%. Similarly, paragraph 0026 of the translation identifies “a high frequency power with an amplitude modulation superimposed is charged from high frequency power generator 43 to antenna 4.” It would appear that this is also of the RF type at the same frequency.

The translation of paragraph 27 of JP ‘339 identifies controlling the temperature of electrons and ions in the plasma so as to generate a number of radicals necessary to a film formation. An asserted benefit is that “film formation can also occur at the temperature of the substrate lower than that of prior art substrate.” Again, this appears to relate to the non-metallic nature of the film which emphasizes the non-analogous nature relative to Neal et al.

Regarding claim 11, clearly Neal et al. does not disclose the claimed situation. For example, Neal et al. does not disclose a midspan shroud. FIG. 3 further shows the damage area as being relatively near the tip rather than more inboard.

There is no basis for the conclusory assertion regarding paragraph 12. The Office should provide specific support.

Claims 3 and 5 were rejected under 35 U.S.C 103(a) as being unpatentable over Neal et al. and JP ‘339 and further in view of JP2003188115. Applicants respectfully traverse the rejection.

It was asserted that “115 modulates square pulse wave form (Figs 1 and 2, [0037]) which will reduce the arc discharge.” Office action, page 4, lines 13&14. It was further asserted that it would have been obvious “to employ the step of modulating square pulse wave form on the method of Neal et al./‘339 so as to reduce the arc discharge.” Office action, page 4, lines 16&17.

Again, the Office has failed to establish that one of ordinary skill in the art would have found Neal et al. (or the insufficiently articulated Neal et al./JP ‘339 combination) deficient, let alone in such a way that one would then have looked for a solution, found that solution in JP ‘115, and attempted that solution with an expectation of success.

JP ‘115 appears to involve forming of wiring on a semiconductor substrate. The Office has merely translated paragraph 0037 which is clearly insufficient. This appears to involve a third dissimilar situation (i.e., dissimilar both to JP ‘339 and to Neal et al.). This non-analogy indicates against any motivation to combine, expectation of success, and the like.

As can best be determined from the limited translation, in JP '115, the pulsed "bias" voltage from unit 12 together with non-modulated RF voltage from units 9, 10 are applied to the substrate holder 3 and, hence, to the substrate 201. These voltages are employed for maintaining the gas discharge between the substrate holder and the substrate (both serve as a cathode for the discharge) and evaporation source 4 (it serves as an anode). The discharge serves as an ion plasma source. The duty factor T2/T of the positive pulses is 40% or lower. If it exceeds 40%, film deterioration occurs. The Office has not clearly articulated how this is combined (e.g., what parameters of Neal et al. and JP '339 it replaces and what, if any, it is superimposed with).

Claim 4 was rejected under 35 U.S.C 103(a) as being unpatentable over Neal et al. and JP '339 and further in view of Osada et al. (US5624720). Applicants respectfully traverse the rejection.

Osada et al. was asserted as teaching "the step of heating the part and modulating the heat on the part in conjunction with the modulating of the 1st electric potential (Figs 1,3A-3E; col. 7, lines 47-61)." Office action, page 5, lines 11&12. It was then asserted that it would have been obvious "to employ the step of heating the part and modulating the heat on the part in conjunction with the modulating of the 1st electric potential, as taught by Osada et al. on the method of Neal et al./'339 so as to achieve high quality and good uniformity deposition film forming (col. 2, lines 63-65)." Office action, page 5, lines 14-17.

Again, the Office has failed to establish that one of ordinary skill in the art would have found Neal et al. (or the insufficiently articulated Neal et al./JP '339 combination) deficient, let alone in such a way that one would then have looked for a solution, found that solution in Osada et al., and attempted that solution with an expectation of success.

Osada et al. identifies a crystalline silicon film applied to a glass substrate used for solar and photo sensor devices. This appears to involve a fourth dissimilar/non-analogous situation relative to Neal et al., JP '339, and JP '115.

Osada et al. involves chemical vapor deposition (CVD) from gaseous precursors (without plasma and ions (col. 6, lines 47-50)) at pressures of about 500mTorr (col. 5, lines 1&2). The Office's asserted modulated heating is a photo energy heating (e.g., laser or halogen lamp). Col. 7, lines 28-52. Temperature modulation is 10-80C (col. 7, lines 50-52; col. 8, line 35). The modulation relates to switching between deposition and etching phases. Col. 6, lines 27-38. The

non-plasma environment is emphasized. Col. 6, line 48. This is a very different environment from Neal et al. and the apparent Neal et al./JP '339 combination, thereby belying any suggestion/motivation/expectation of success.

Claim 13 was rejected under 35 U.S.C 103(a) as being unpatentable over Neal et al. and JP '339 and further in view of Carl, Jr. et al. (US6754955). Applicants respectfully traverse the rejection.

The copper chill plate of Carl, Jr. et al. was asserted as being the presently-claimed backing element. However, there is no teaching that this plate is applied to the component or that the material builds up on the base surface and this component. FIG. 4 of Carl, Jr. et al. clearly shows this component spaced apart from the weld build-up material 30. This does not appear to be an exploded view because the surface 32 is shown as irregular whereas the adjacent surface of the chill plate 26 is clearly straight (in section). The chill plate may, for example, be positioned to block adjacent airfoils from splatter.

The Response to Arguments section is not informative. It merely asserted that "Carl, Jr. et al. teaches the step of applying a backing element to the part protruding adjacent the site so that the deposited repair material builds up on the base surface and backing element even though it seems spaced apart from the weld build-up material." Office action, page 6, last line-page 7, line 2. First, use of the word "seems" falsely implies that the Carl, Jr. et al. element is, in fact, not spaced apart. Second, the term "backing element" is vitiated and the reference to deposited repair material is vitiated. The Carl, Jr. et al. plate does not serve as a backing element but merely accumulates splatter. It is not the deposited repair material.

Furthermore, there is no suggestion for the combination. The conclusory "to repair the tip of a turbine blade" is not sufficient. There is no suggestion that there is a deficiency for which Carl, Jr. et al. provides a cure.

The rejection also suffers the deficiencies of the underlying rejections based upon Haas et al. and the Haas et al. and Neal et al. combination.

Accordingly, Applicants submit that claims 1-16 and 20-34 are in condition for allowance. Please charge any fees or deficiency or credit any overpayment to our Deposit Account of record.

Respectfully submitted,

By /William B. Slate, #37238/
William B. Slate
Attorney for Applicants
Reg. No.: 37,238

Telephone: 203-777-6628
Telefax: 203-865-0297

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